Assessing Chinese Intentions for the Military Use of the Space Domain

A Monograph
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The continuing rise of Chinese political and military power has made Americans suspicious of China's intentions in the space domain. For many in the American defense community, the 2007 Anti-Satellite (ASAT) test was the smoking gun that proved China's ultimate desire to challenge American space dominance. Other experts, however, have proposed a more benign intent behind such actions, leading to vigorous debates over Chinese motives and the appropriate American responses. How can American policymakers decipher Chinese intentions for space to craft sound defense policy? This monograph proposes that to understand Chinese intentions, it is necessary to examine the current schools of military thought vying for influence within China's policymaking apparatus. The school with the most influence should dominate decisions regarding the development of Chinese space capabilities, and hence the direction of their military space policy. Such an examination suggests that although Chinese actions may appear to challenge American power, the dominant influence of the Local War school of thought indicates that China's primary intention for space is to reinforce its regional hegemony.

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Abstract

ASSESSING CHINESE INTENTIONS FOR THE MILITARY USE OF THE SPACE DOMAIN by MAJ Paul S. Oh, US Army, 45 pages.

The continuing rise of Chinese political and military power has made Americans suspicious of China's intentions in the space domain. For many in the American defense community, the 2007 Anti-Satellite (ASAT) test was the smoking gun that proved China's ultimate desire to challenge American space dominance. Other experts, however, have proposed a more benign intent behind such actions, leading to vigorous debates over Chinese motives and the appropriate American responses. How can American policymakers decipher Chinese intentions for space to craft sound defense policy? This monograph proposes that to understand Chinese intentions, it is necessary to examine the current schools of military thought vying for influence within China's policymaking apparatus. The school with the most influence should dominate decisions regarding the development of Chinese space capabilities, and hence the direction of their military space policy. Such an examination suggests that although Chinese actions may appear to challenge American power, the dominant influence of the Local War school of thought indicates that China's primary intention for space is to reinforce its regional hegemony.

Experts have used multiple models to tackle the question of Chinese intentions. Most have defaulted to some version of the Rational Actor model. From this perspective, events in foreign affairs are "more or less purposive acts of unified national governments." As Allison and Graham discuss, however, there are alternative models to explain government actions. In the Government Politics model, policy outcomes are "resultant of bargaining games among players in the national government." Traditionally, proponents of the Government Politics model have analyzed the competition within China along institutional lines. This monograph utilizes a variation of this model, analyzing the bargaining along the lines of alternative schools of military thought.

In applying the schools of thought framework, the monograph begins with an *a priori* analysis of the various schools within the People's Liberation Army and how each school might influence the development of military space policy. The three schools of thought are broadly categorized as the People's War school, Local War school, and Revolution of Military Affairs school. In theory, each school will support the development of distinctive technology, doctrine, and organization of the military. These developments will produce capabilities that inform the strategic posture of China vis-à-vis its potential adversaries. Each school of thought will also be concerned about the domestic impact of military space policy to different degrees. The monograph analyzes China's military space policy by using these criteria of "strategic military posture" and "societal impact." The examination of two Chinese space programs, the Anti-Satellite program and the manned space program, shows the dominant influence of the Local War school of thought. This informs the nature of Chinese intentions for the military use of space and possible ramifications for the American military.

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Introduction

The continuing rise of Chinese political and military power has made Americans suspicious of China's intentions in the space domain. For many in the American defense community, the 2007 Anti-Satellite (ASAT) test was the smoking gun that proved China's ultimate desire to challenge American space dominance.[1] Other experts, however, have proposed a more benign intent behind such actions, leading to vigorous debates over Chinese motives and the appropriate American responses.[2] How can American policymakers decipher Chinese intentions for space to craft sound defense policy? This monograph proposes that to understand Chinese intentions, it is necessary to examine the current schools of military thought vying for influence within China's policymaking apparatus. The school with the most influence should dominate decisions regarding the development of Chinese space capabilities, and hence the direction of their military space policy. Such an examination suggests that although Chinese actions may appear to challenge American power, the dominant influence of the Local War school of thought indicates that China's primary intention for space is to reinforce its regional hegemony.

Interaction between the United States and China over military space policy is rare. The United States has been continually frustrated by the closed nature of the Chinese space program. In 2004, then Chairman of the Joint Chiefs of Staff Richard Myers led the first American delegation to the Chinese space center outside of Beijing. The tour of facilities was extremely limited and did nothing to assuage American concerns.[3] Because of the limited interactions, there has been a great deal of "miscommunication, misinterpretation, misrepresentation, and poor

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[1] See Ashley J. Tellis, "China's Military Space Strategy," *Survival* 49:3 (Autumn 2007): 41-72.

[2] See "China' Military Space Strategy: An Exchange," *Survival* 50:1 (February-March 2008): 157-198.

[3] "U.S. Officials Visits China's Visit Center," *New York Times*, January 15, 2004.

assumptions made by each side" about the other's intentions.[4] Does China, for example, want to challenge American supremacy of space and ultimately American global hegemony? Or does it simply want to use space to increase the capacity to fight and win local wars? Or are its intentions centered on strengthening defenses while instilling national pride to help legitimize the central government? As one author states, evidence can be found to prove any of these theses.[5]

Experts have used multiple models to tackle the question of Chinese intentions. Most have defaulted to some version of the Rational Actor model. From this perspective, events in foreign affairs are "more or less purposive acts of unified national governments."[6] Experts have explained these purposive acts in terms of seeking power or seeking security.[7] As Allison and Graham discuss in *The Essence of Decision*, however, there are alternative models to explain government actions. In the Government Politics model, policy outcomes are "resultant of bargaining games among players in the national government."[8] Traditionally, proponents of the Government Politics model have analyzed the competition within China along institutional lines. This monograph utilizes a variation of this model, analyzing the bargaining along the lines of alternative schools of military thought.

In applying the schools of thought framework, the monograph begins with an *a priori* analysis of the various schools within the People's Liberation Army and how each school might influence the development of military space policy. The three schools of thought are broadly categorized as the People's War school, Local War school, and Revolution of Military Affairs

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[4] Joan Johnson-Freese, *Space as a Strategic Asset* (New York, Columbia University Press, 2007), 201.

[5] Ibid., 214.

[6] See the following for a complete explanation of the competing models. Graham Allison and Philip Zelikow, *Essence of Decision* (New York: Longman, 1999), 4.

[7] This is informed by offensive and defensive realist theory which states that states either seek power or seek stability. See Tim Dunne and Brian C. Schmidt, "Realism," in *The Globalization of World Politics: An Introduction to International Relations*, ed. John Baylis, Steve Smith, and Patricia Owens (Oxford: Oxford University Press, 2008), 90-105.

[8] Graham Allison and Philip Zelikow, *Essence of Decision*, 6.

school. In theory, each school will support the development of distinctive technology, doctrine, and organization of the military. These developments will produce capabilities that inform the strategic posture of China vis-à-vis its potential adversaries. Each school of thought will also be concerned about the domestic impact of military space policy to different degrees. The monograph analyzes China's military space policy by using these criteria of "strategic military posture" and "societal impact." The examination of two Chinese space programs, the Anti-Satellite program and the manned space program, shows the dominant influence of the Local War school of thought. This informs the nature of Chinese intentions for the military use of space and possible ramifications for the American military.

Literature Review

China experts tend to view Chinese actions through the prism of the Rational Actor model. Ashley Tellis, for example, sees Chinese military space policy and in particular the Anti-Satellite test of 2007 as a logical extension of how China has tried to steer its rise in global affairs. In his estimation, "China's Janus-faced policy suggests it is driven less by bureaucratic accident or policy confusion than by a compelling and well-founded strategic judgment about how to counter the military superiority of its opponent."[9] The rational Chinese policy focuses on the attainment of power. Chinese space strategy is then geared towards eliminating obstacles to achieving this power. Given its inferior military capabilities, China needs to strike at America's Achilles' heel. The ability to neutralize American space systems quickly would "permit a weaker Chinese military to deter, delay, degrade, or defeat the superior warfighting capabilities of the United States and 'level the playing field' in a shooting war."[10]

Likeminded experts paint a picture of Chinese strategists uniformly and methodically laying the foundation for challenging American space dominance. Mary FitzGerald, in her

[9] Ashley J. Tellis, "China's Military Space Policy," 45.

[10] Ibid., 48.

testimony before the U.S.-China Economic and Security Review Commission, asserted that Chinese military strategists and aerospace scientists have been constructing a blueprint for achieving space dominance for nearly a decade.[11] She assumes China's rational decisions to attain power explain both the current and future Chinese policy. These experts often cite Chinese theorists that view space warfare as inevitable as evidence for their conclusions. Senior Colonel Yao Yunzhu's comment of "My prediction: outer space is going to be weaponized in our lifetime" has been the type of evidence used to explain Chinese future intentions. [12]

Other experts disagree with this view of China's focus on power which leads to an aggressive and hostile military space policy. From their perspective, China is not seeking power; it is seeking security from the aggressive United States. Johnson-Freese notes that two critical events occurred in 2001 of which the Chinese took note. First, the United States issued a Space Commission report which acknowledged space as a future battleground. Second, the United States conducted *Schriever I*, its first ever space war game.[13] Shen Dingli argues that these events that look like steps towards American militarization of space, coupled with continual American interference in the internal affairs concerning Taiwan, means that China will seek a "space balance of force to assure a new type of security stability."[14] As Eric Hagt points out, it is not logical that the Chinese would challenge the current American space power considering the status of their capabilities.[15] But seeking ways to assure security in the face of American aggressiveness may be prudent.

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[11] Mary C. FitzGerald, "China's Military Strategy for Space" (testimony presented before the U.S. China Economic and Security Review Commission, 30 March 2007), 1.

[12] Edith M. Lederer, "Chinese Colonel Sees Arms in Space," *Washington Times*, 27 January 2007.

[13] Joan Johnson-Freese, *Space as a Strategic Asset*, 223.

[14] Shen Dingli, "China's Defensive Military Strategy: the Space Question," *Survival* 50:1 (February-March 2008): 174.

[15] See Eric Hagt "Mirror Imaging and Worst case Scenarios," *Survival* 50:1 (February-March 2008): 164-170.

Others, like Michael Krepon, are more optimistic about Chinese future intentions. A rational China will surely see the harm that would result from a policy that threatens American space capabilities. Krepon argues that China will restrain itself in part because attacking American assets also means leaving itself vulnerable for a counterattack. Furthermore, he believes that as space-faring nations become "more invested in satellites for economic growth, global commerce and military capabilities, the more they will pause" before opening what he calls the Pandora's Box which leads to a space arms race.[16] Krepon hypothesizes that events like the Anti-Satellite test are merely deterrence messages stating that in the event of a crisis, the "United States could not count on 'owning' space."[17]

The use of the Rational Actor model is dominant in all of these alternate views. China is a unitary actor methodically pursuing its national interest. The danger of such analysis, however, is that of "Mirror-imaging [one's] own strategic logic onto China."[18] A remedy is to complement this analysis with insights using the Government Politics model. Many authors have observed the bureaucratic conflict within the Chinese policy making apparatus. For example, Michael Krepon notes that the official silence after the 2007 Anti-Satellite test suggests the Foreign Ministry and People's Liberation Army did not coordinate actions with each other.[19] Then National Security Advisor Stephen Hadley suggested that the senior Chinese leaders may not have been fully aware of the military's plan regarding the test.[20] Andrew Schobell notes the People's Liberation Army's

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[16] Michael Krepon, "China's Military Space Strategy: An Exchange," *Survival* 50:1 (February-March 2008): 162.

[17] Ibid., 162.

[18] Eric Hagt "Mirror Imaging and Worst case Scenarios," 169.

[19] Michael Krepon, "China's Military Space Strategy: An Exchange," 163.

[20] David E. Sanger and Joseph Kahn, "US Tries to Interpret China's Silence Over Test," *New York Times*, 21 January 2007.

tendency to act "roguish," taking advantage of the broad civilian guidelines and lack of institutionalization of civil control to do as they wish.[21]

But is it also possible that the seams within the Chinese policymaking apparatus do not fall along institutional lines? Perhaps there is less a civil-military divide than a divide among different camps within the military? Perhaps different civilian government officials are aligned with these respective camps? The possibility that the tension evident in China's military space program is caused by different schools of thought existent among the government and military officials is worth exploring. That all People's Liberation Army officers and civilian leaders do not think alike is a safe assertion. Identifying and tracing the influence of the various schools may provide insight into the reasons behind past Chinese actions as well as future intentions.

Schools of Thought

Various experts have identified at least three schools of thought existing within the People's Liberation Army.[22] They are broadly categorized as the People's War School, the Local War School, and the Revolution of Military Affairs School. Each school has its roots in writings by past Chinese leaders as well as lessons learned from watching western warfare. In one sense, these schools intertwine seamlessly in Chinese thought. As Dennis Blasko notes, "the People's Liberation Army's persistent simultaneous references to People's War, Local War under a variety of conditions, and Revolution of Military Affairs with Chinese characteristics reveal continuity with past practices and traditions while transforming and modernizing the force for 21st century

[21] Andrew Scobell, "Is There a Civil-Military Gap in China's Peaceful Rise," *Parameters* (Summer 2009): 18.

[22] Michael Pillsbury has conducted a seminal study on the various Chinese schools of thought. See Michael Pillsbury, ed., *Chinese Views of Future Warfare* (Washington D.C.: National Defense University Press, 1997). There does not seem to be agreement, however, on the boundaries of the various schools or the extent to which they are distinct. See also David Shambaugh, *Modernizing China's Military: Progress, Problems, and Prospects* (Berkeley: University of California Press, 2002), 74-64. It is not clear, for example, what capabilities are championed by Local War advocates versus the Revolution of Military Affairs advocates. As the latter sections will show, this monograph uses the purpose behind the support of the development of a certain capability as the key discriminator.

requirements.[23] Blasko's model is a triangle showing how each school informs a portion of the doctrine, equipping, and formation of Chinese forces.[24] The People's War informs the development of the broad base of Chinese equipment and force structure, the Revolution of Military Affairs the narrow top, and the Local War the middle portion.[25]

In another sense, Chinese leaders have to make hard decisions in determining how to apportion spending for the military. Like any other country, China pursues modernization and development under budgetary constraints. Though spending on defense has greatly increased and more funds are available for fewer troops, the personnel, equipment, and training costs for a more modern and technologically advanced military has become significantly higher.[26] According to Blasko, a common theme in modernization efforts is saving money and finding innovative ways to conserve or spend funds.[27] Even as its economic power grows, China will need to choose where to invest in the research and development of technology and force structure.

These choices are informed by the various schools of thought. These schools compete for influence to develop and posture the military to be able to accomplish the missions that they deem essential. One area that clearly depicts these tensions is Chinese naval policy. Bernard Cole addresses the Chinese leaders' options of employing the People's Liberation Army Navy (PLAN) under the concepts of active defense, off shore, the use of island chains as strategic

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[23] Dennis J. Blasko, *The Chinese Army Today: Tradition and Transformation for the 21st Century* (New York: Routledge, 2006), 183.

[24] Michael Pillsbury, "PLA Capabilities in the 21st Century," in *The Chinese Armed Forces in the 21st Century*, ed. Larry M. Wortzel (Carlisle: Strategic Studies Institute, 1999), 118.

[25] Ibid. His assertion is that the broad majority of the People's Liberation Army is based on the People's War concepts. A smaller portion is focusing on modernization to fight local war with a selected portion concentrating on the Revolution of Military Affairs.

[26] See "The Fourth Modernisation," *The Economist*, December 4-10, 2010, 7. The Stockholm International Peace Research Institute puts the overall spending in 2009 at $99 billion, compared to the U.S.'s $663 billion. As a portion of the GDP, China spends less than half the American figure and less that it did at the start of the 1990s. See also for further discussion Dennis J. Blasko, *The Chinese Army Today*, 9.

[27] Dennis J. Blasko, *The Chinese Army Today*, 9.

delineator, or blue water.[28] The influence of the three different schools of thought that inform these disparate concepts at sea is analogous to how they inform the concepts for space policy. People's War school would advocate Active Defense for the purposes of strategic defense of the homeland. The Revolution of Military Affairs school would advocate the blue water navy to achieve global presence and perhaps challenge American dominance in the future. Similarly, these schools of thought come to different conclusions on how to develop technology, doctrine, and organization to use space to accomplish their purposes.

People's War

The People's War (*renmin zhanzheng*) school of thought has been the foundation of China's military thinking since its formulation in the 1930 and 1940s by Mao Zedong.[29] The basic concept revolves around defending the mainland from a more advanced enemy by taking advantage of China's inherent strengths of a large population and vast land mass. While trading space for time, Chinese forces would employ their traditional fighting skills of speed, surprise, deception, and stratagem.[30] This school of thought evolved in the 1950s to "People's War Under Modern Conditions" and later to the "People's War Under Information Conditions." Although this school does not shun technological advancement, the focus remains on the role of the population and the ability to mobilize the people and industry to support the People's Army.[31]

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[28] Bernard D. Cole, "The PLA Navy and 'Active Defense,'" in *The People's Liberation Army and China in Transition*, ed. Stephen J. Flanagan and Michael E. Marti (Washington D.C.: National Defense University Press, 2003), 129 – 138.

[29] Alison A. Kaufman and Peter W. Mackenzie, *Field Guide: The Culture of the Chinese People's Liberation Army* (CNA China Studies, February 2009), 3-4.

[30] Dennis J. Blasko, *The Chinese Army Today*, 11.

[31] Ibid., 12.

People's War still has a major influence on the thinking of Chinese military leaders, and is often referred to as China's "secret weapon."[32]

People's War advocates are conservatives, clinging to what they view as enduring and validated concepts. This school believes that while world wars might be postponed or avoided, local wars and regional conflicts are far from over.[33] The scenario this school prepares for is the invasion of China. They assume that war will last many years, that China's leaders can move to alternative national capitals, and that the defense-industrial base will arm the military over time.[34] Operationally, People's War is translated into the strategy of "active defense." The People's Liberation Army will not strike first but will conduct a strategic defense through proactive tactical offensive engagements.[35] This strategy is rooted in the belief that China does not seek global hegemony, is self defensive in nature, and not expansionist.[36] It also implicitly recognizes the inferiority of the military relative to its potential foes. The focus is inward, and advocates support investments in layered strategic air defense, enhanced underground defense complexes, extensive ground forces around the national capital, border defense forces, and a large Armed Police for internal stability and counter subversion.[37]

For the People's War advocates, space has limited value in the type of war that they envision. They are not hostile to the use of space, but believe that committing China's limited resources to space weaponization would be a costly mistake. They are especially against the idea of challenging American hegemony in space. Not only would challenging the Americans not be

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[32] Ibid., 95.

[33] Wang Naiming, "Adhere to Active Defense and Modern People's War," in *Chinese Views of Future Warfare*, ed. Michael Pillsbury (Washington D.C.: National Defense University Press, 1997), 37.

[34] Michael Pillsbury, "PLA Capabilities in the 21st Century," 112.

[35] Dennis J. Blasko, *The Chinese Army Today*, 96.

[36] Wang Naiming, "Adhere to Active Defense and Modern People's War," 38. Wang sees these attributes as being consistent with the socialist nature of the state.

[37] Michael Pillsbury, *China's Military Strategy Toward the U.S.: A View from Open Source* (November 2, 2001), 6.

aligned with the core of the military strategy of 'active defense,'[38] other priorities such as economic development would suffer in a potential arms race. As Wu Chunsi asserts, China "does not have the luxury of engaging in a military competition with superpowers in space."[39]

This is not to say that they wouldn't welcome technological advances stemming from space programs that improve China's strategic defense. An example of the technological advancement this school may support is the improvement of launch vehicles. The development of the *Long March V* rocket, which is essential for the Chinese to enter the next phase of the manned space program, may be the type of technology worth their investment.[40] Research into these launch vehicles may aid the development of the air defense and ballistic missile defense systems needed to defend the mainland. Advances in areas like guidance and tracking systems may greatly benefit the effectiveness of weapons to be used against invading forces.

In terms of doctrine and organization, the People's War school would yield little development. Because space is not fully integrated into fighting People's War, there would be little need to revamp the doctrine of the way the People's Liberation Army fights. Changes would also likely be minor in the reorganization of the People's Liberation Army structure. For example, increased linkages between the Second Artillery and the China National Space Administration (CNSA)[41] may develop as the military and civilian officials increase their cooperation to ensure the successful development of lift technology.

Though the People's War school may not champion radical developments in space, it is also not ignorant of the immense prestige associated with space activities. A demonstration of

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[38] Sun Dangen, "Shenzhou and Dreams of Space," *China Security* 2 (2006): 62.

[39] Ibid., 113.

[40] Anatoly Zak, "China considers big rocket power," *BBC News*, 26 July 2010, http://www.bbc.co.uk/news/science-environment-10762634 9 (accessed December 21, 2010). See also Michael Pillsbury, *China's Military Strategy Toward the U.S*, 6.

[41] The 2nd Artillery is the People's Liberation Army's strategic missile force. The China National Space Administration is China's equivalent of the National Aeronautical Space Agency and manages the national space activities. See website at www.cnsa.gov.cn.

power in space benefits the People's Liberation Army by increasing nationalistic pride for the country and the military. The People's War school, more than others, is sensitive about the need to foster the bond among the people, the army, and the communist party. [42] In recent years, Chinese leaders have relied on this nationalistic pride to help legitimize the communist regime.[43] In this light, this school is more attuned to the message that military actions in space can send to the domestic audience. The Chinese people have taken great pride in the *Shenzhou* manned-space program, for example, and both the Party and the military have used these events to showcase the continued rise of China to its citizens. [44]

Local War

The Local War school of thought has been heavily influenced by Deng Xiaoping and the Chinese lessons learned from their experience in Vietnam and later the American experience in the Persian Gulf. Advocates call for the People's Liberation Army preparing for smaller and quicker wars on the periphery rather than a protracted war on Chinese soil. Many authors on Local War trace the origin of the concept to Deng's speech to the Central Military Commission in 1985.[45] The Local War school envisions the People's Liberation Army transforming from a "manpower-intensive, technologically backward force into a quantitatively smaller, qualitatively better, technologically advanced force" able to compete against regional adversaries.[46]

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[42] The political and military elite continue to emphasize the Party-Army relationship in China. This relationship stems from Maoist thought that continues to guide the People's War advocates. See Alison A. Kaufman and Peter W. Mackenzie, *Field Guide: The Culture of the Chinese People's Liberation Army*, 3-4.

[43] See Suisheng Zhao, *Chinese Nationalism and Approaches toward East Asian Regional Cooperation* (Council of Foreign Relations, 2010), 1.

[44] Chang Xianqi and Sui Junqin, "Active Exploration and Peaceful Use of Space," *China Security* 2 (2006): 16.

[45] Michael Pillsbury, "PLA Capabilities in the 21st Century," 112.

[46] Dennis Blasko, *The Chinese Army Today*, 12.

This school of thought has evolved since its inception and continues to remain in the mainstream discourse of Chinese strategic policy. Andrew Scobell details the evolution of this thought through the analysis of the Military Strategic Guidance (MSG) issued by the Chinese Communist Party.[47] In the Military Strategic Guidance of 1993, Jiang Zemin stated that the Chinese military should be ready to fight "local, limited war" on China's periphery "under high technology conditions." The American performance in Operation DESERT STORM greatly influenced Chinese discourse. As Cliff et al explain, the overwhelming success of the U.S. military forced the Chinese analysts to reconsider how to fight modern wars.[48] In 2002, Jiang Zemin modified the guidance to state that the Chinese Army should now be prepared to fight a limited war "under conditions of informatization."[49] This reflected the main lesson learned that information is the true distinguisher of a modern army. The Chinese government has tasked the People's Liberation Army to simultaneously make advances in mechanization and information to catch up to its potential adversaries.

In the Local War scenario, the adversary is not necessarily a superpower. The war is near China's border and not a deep invasion. There is no time to mobilize, and China wages war for limited means. China seeks a quick military decision by committing rapid reaction forces to defeat its adversaries.[50] The war is short and intense, and units fight jointly and using combined arms that integrate advanced technology, to include space technology. Regional force protection

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[47] Military Strategic Guidance is "the highest level of national guidance and direction to the armed forces of China" and is roughly equivalent to the American National Military Strategy. For more information, see David M. Finkelstein, "China's National Military Strategy: An Overview of the Military's Strategic Guidelines," in *Right-Sizing the PLA: Exploring the Contours of China's Military*, eds. Roy Kamphausen and Andrew Scobell (Carlisle: Strategic Studies Institute, 2007): 69-140.

[48] Roger Cliff et al., *Entering the Dragon's Lair* (Santa Monica: Rand, 2007), 20.

[49] See Andrew Scobell, "Discourse in 3-D: The PLA's Evolving Doctrine, Circa 2009," in *The PLA at Home and Abroad*, eds. Roy Kamphausen, David Lai, and Andrew Scobell (Carlisle: Strategic Studies Institute, 2010): 99-134.

[50] Michael Pillsbury, "PLA Capabilities in the 21st Century," 113.

may be required to defend Chinese islands or western China or protect its interest in the South China Seas.[51]

The Local War advocates realize that they are behind technologically even among their regional neighbors. China lags in areas like airborne warning and control aircraft, national command and control system, airborne and amphibious forces, and fighter aircrafts.[52] They realize that space is integral to building a military that can fight modern wars effectively. [53] The American wars in Kosovo and the Persian Gulf showed that space-based Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR) was vital for joint warfighting and informational warfare.[54] The People's Liberation Army must operate in space to fight under conditions of *informatization*.

The technology that this school may promote includes space assets that enhance intelligence, surveillance, navigation, and communications.[55] Reconnaissance satellites are valuable for conducting timely and accurate intelligence gathering. Weather satellites collect global weather information, and earth observation satellites collect terrain data. Data relay, navigation, and positioning satellites allow precise maneuvering on earth, while communications satellites provide secure communications between forces.[56] In addition, China requires network technology to link all of this information. In sum, satellites and the information they provide will allow the People's Liberation Army to achieve its goal of fighting regional adversaries under conditions of *informatization*.

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[51] See "Brushwood and Gall," *The Economist*, December 4-10, 2010, 3-5.

[52] Michael Pillsbury, *China's Military Strategy Toward the U.S.: A View from Open Source*, 5.

[53] Joan Johnson-Freese, *Space as a Strategic Asset*, 222.

[54] Office of the Secretary of Defense, *Annual Report to Congress: Military Power of the People's Republic of China 2009* (2009), 13.

[55] See Ibid., 52.

[56] Deng Cheng, "Prospects for China's Military Space Efforts," in *Beyond the Strait: PLA Missions Other Than Taiwan*, eds. Roy Kamphausen, David Lai, and Andrew Scobell (Carlisle: Strategic Studies Institute, 2008): 224.

As Deng Cheng notes, the doctrine for space operation will emphasize the symbiosis between space systems and information systems. For the Chinese, the need for achieving information dominance (*zhi xinxi quan*) is linked to achieving space dominance (*zhi tian quan*).[57] The doctrine will highlight the need to fully leverage the capabilities of the modern C4ISR systems to integrate operations (*zhengti zuozhan*) on all domains of warfare.[58] This integration is contingent on the ability to link operations in space with the operations on earth. Local war advocates will work to strengthen this linkage so that the military can operate in a "complex electromagnetic environment."[59]

Organization-wise, this school will not advocate any change in structure in regards to space operations. But they may seek ways to better integrate the different branches to work more effectively together. This may include exploration to increase jointness in their Headquarters with a staff structured to incorporate data from satellites to enable the People's Liberation Army forces to fight more effectively.

Like the People's War school, the Local War school is also sensitive about the need to foster the bond among the people, the army, and the communist party. There is a debate, however, on how well the military can balance its traditional role of the protector of communist ideology with the need for a more professionalized force. The Local War school may emphasize this need for the professionalization of the military so that the People's Liberation Army can be an "expert" as well as "red" in the contemporary environment.[60] They are also attuned to the message that military actions in space can send to the domestic audience, though probably to a lesser degree than the People's War school.

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[57] Ibid., 215.

[58] Ibid., 217.

[59] Office of the Secretary of Defense, *Military Power of the People's Republic of China 2009*, 26.

[60] "Expert" refers to the identity of a professional military force whereas "Red" refers to the identity of a political Party-Army. See discussion on civil-military relations in David Shambaugh, *Modernizing China's Military*, 11-55.

Revolution of Military Affairs

The Revolution of Military Affairs school of thought is the newest among the three. The Chinese interest in Revolution of Military Affairs dates back to 1994 as they saw potential adversaries capitalizing on technological advances. Although this school did not have much influence in the policy making realm prior to 1999, it seemed to have gained greater influence with the new millennium. Starting in 2003, the People's Liberation Army officially endorsed the term "Revolution of Military Affairs with Chinese characteristics." This term was codified in 2004 in the White Paper on National Defense.[61] The Revolution of Military Affairs school of thought advocates a more drastic departure from the other schools, calling for development of offensive capabilities that can challenge American supremacy.

The scenarios for war envisaged by the Revolution of Military Affairs school involves a conflict with a superpower.[62] This school is trying to solve the problem of defeating an adversary that is far superior militarily. The People's Liberation Army can try to close the military gap between China and the United States. But many Revolution of Military Affairs advocates warn that if China tries to match American technology year after year, the end result will be them falling further behind.[63] Instead, this school says that the People's Liberation Army should concentrate its efforts on developing leap-ahead technology and asymmetric capabilities. The People's Liberation Army can then execute preemptive operations or asymmetrical warfare that can paralyze a superior force. According to a *Liberation Army Daily* article, then President Jiang Zemin called for an accelerated development of an Assassin's Mace weapon in August 1999.[64]

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[61] Dennis J. Blasko, *The Chinese Army Today*, 13.

[62] Michael Pillsbury, "PLA Capabilities in the 21st Century," 125.

[63] Michael Pillsbury, "China's Military Strategy Toward the U.S.," 4.

The "Assassin's Mace" is representative of the type of investment that this school advocates.[65] Based on Chinese folklore, the Assassin's Mace refers to any exotic and advanced secret military weaponry that allows the inferior to defeat the superior.

Given this logic, it is not surprising that this school of thought views space as essential in achieving their goals. American hawks have repeatedly cited Chinese analyst Wang Hucheng who stated, "For countries that can never win a war with the United States by using the methods of tanks and planes, attacking an American space system may be an irresistible and most tempting choice."[66] Of concern for the United States is that this school sees warfare in space as unavoidable. A core Chinese document, the *Science of Military Strategy*, states, "It seems that space warfare will be inevitable in future wars and that space offensive is likely to be a new strategic offensive pattern in the future."[67] In a hypothetical war over Taiwan, the Chinese military may seek to conduct offensive space operations to cut the American "umbilical cords to space, and deprive [the U.S.] of their force-multiplying assets."[68]

The technology that the Revolution of Military Affairs school may promote is the development of counter-space assets. The 2007 testing of the direct ascent Anti-Satellite missile may be an indicator that the People's Liberation Army is serious about the development of such weapons. Anti-Satellite missiles are probably the most cost effective method of attacking space assets, though China has become sensitive to the international criticism of space debris left by the 2007 test.[69] Other technologies may also be developed for this purpose, to include kinetic and

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[65] Office of the Secretary of Defense, *Military Power of the People's Republic of China 2009*, 20.

[66] Joan Johnson-Freese, "Strategic Communication," *China Security* 2 (2006): 41.

[67] Richard D. Fisher, *China's Military Modernization* (Westport, CT: Praeger,2008), 79.

[68] Bruce Blair and Chen Yali, " Editors' Notes," *China Security* 2 (2006): 13.

[69] The Chinese were sensitive to the international criticism on the amount of space debris resulting from the 2007 ASAT test. The test added more than 2 million pieces of debris to the low Earth orbit. See John Johnson, "Scientists cite growing peril of space junk," *Los Angeles Times*, April 16, 2008, A10.

directed energy weapons.[70] Certain Chinese analysts have advocated development of killer satellites, space based antiballistic missiles, and space landmines.[71]

The doctrine that this school of thought may advocate would center on using space capabilities for asymmetrical attacks or preemptive warfare. As Bruce Blair and Chen Yali note, there is a body of Chinese literature that promotes a possible offensive mission of "attacking an adversary's space assets in order to diminish its regional warfighting capability." Perhaps the most noticed work is the book *Unrestricted Warfare* by two People's Liberation Army Senior Colonels. In this work, Colonels Qiao and Wang recommend a "combination of low and high technology means to create a new track of war in the [21st] century, and given to principles with which professional [Western] military people are unfamiliar."[72] Asymmetric space doctrine, like the use of an Assassin's Mace to target the American Achilles' heel, fits this mold. Doctrine may emphasize the need to quickly strike at American space capabilities to paralyze its efforts early.

Revolution of Military Affairs advocates may support the development of a whole new organization to conduct space warfare. In Richard Foster's interviews in 2004, People's Liberation Army officers debated which branch would dominate the new "space force" to be created - the Air Force or the Second Artillery.[73] In July 2006, Hong Kong Journal *Chien Shao* published an article claimed to be based on People's Liberation Army literature and sources that China has been secretly preparing a "space war experimental team" that could lead to the formation of a new service assembled from elements of the General Armament Department, the

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[70] See Office of the Secretary of Defense, *Military Power of the People's Republic of China 2009*, 27.

[71] See Mary C. FitzGerald, "China's Military Modernization and its Impact on the United States and the Asia-Pacific."

[72] Qiao Liang and Wang Xiangsui, *Unrestricted Warfare* (Panama City: Pan American Publishing Company, 2002), xi.

[73] Richard D. Fisher, *China's Military Modernization*, 79.

Space Agency, and the Second Artillery Corps. This organization might have 90,000 personnel and be subordinate directly to the Chinese Military Commission.[74]

Unlike the other two schools, the domestic impact of actions in space is likely to be a lesser concern for the Revolution of Military Affairs school. Their emphasis on technology and a preemptive offensive is not aligned with the traditional values of the People's Liberation Army or the tradition rhetoric of the Communist Party. For these advocates, the desire to achieve strategic parity with the United States may override these domestic concerns.

The chart below summarizes the three schools of thought and the *a priori* analysis of the type of technological, doctrinal, and organizational developments that they may advocate (see table 1). This overview provides the framework with which to analyze the case studies of People's Liberation Army's involvement in space activities.

	Threat	View of Space	Space Technology	Space Doctrine	Organization	Domestic Concerns
People's War	Invasion Army	Limited	Launch vehicles to use for defense systems	Little Development	No Change	High
Local War	Regional Competitors	Integral	Modern C4ISR Capabilities	Joint Operations Networked to Space Capabilities	No Change	Moderate/ High
RMA	United States	Essential	Leap ahead technology; asymmetric capabilities	Asymmetric Attack	Space Force	Indifferent

Table 1: Characteristics of the Schools of Thought: A priori analysis

[74] Chin Chien-li, "PRC is Preparing for Form[ing] a Space Force," *Chien Shao,* July 1 2005, 52-55, quoted in Richard D. Fisher, *China's Military Modernization*, 79.

Methodology

The rest of this monograph focuses on how these schools of thought inform military space policy. The method for analysis is the use of two qualitative case studies detailing the histories of the Anti-Satellite (ASAT) program and the Manned Space Program. The intent of these case studies is to see if the influence of a dominant school of thought is visible. These case studies were chosen because they are on the surface the two programs that most challenge American hegemony in space. Indeed, many analysts view these programs purely in the context of China's relationship with the United States.[75] But tracing the influence of the schools of thought through these case studies provides an alternate view of how China views their space programs.

From the literature emerge two major criteria for analyzing which school of thought has the dominant influence. The first criterion is the "strategic military posture" which examines how the People's Liberation Army seeks to array against potential adversaries. This criterion is a function of the People's Liberation Army's capabilities resulting from the developments in technology, doctrine, and organization. If the developments in technology, doctrine, and organization produce space capabilities that are behind that of the United States and its regional neighbors, then this is indicative of a globally defensive posture. If the People's Liberation Army is seeking to develop space capabilities that matches or exceeds that of their regional neighbors, then this is indicative of a locally offensive posture vis-à-vis its regional neighbors. If the People's Liberation Army is seeking to develop space capabilities that matches or exceeds that of the United States, then this is indicative of a globally offensive posture. Each strategic posture corresponds with a particular school of thought.

[75] For example, see Ashley Tellis, "China's Military Space Strategy."

As the literature review shows, the People's War school of thought champions a globally defensive posture.[76] Following the classical Maoist thought, this school envisions a war that is defensive in nature because it is reacting to an invading enemy. The Local War school champions a globally defensive posture vis-à-vis the United States, but leaves room for possibly shifting to a locally offensive posture vis-à-vis its neighboring countries. The quest for regional hegemony or conflict over natural resources may require force projection for offensive operations in the peripheries of China (see table 2).[77] The Revolution of Military Affairs school of thought champions a globally offensive posture. They envision the war with the United States as a real possibility, and recognize the need for preemptive offensive actions to be victorious if a war should arise.[78] The tactical posture of the People Liberation's Army is not a strong discriminator, for all three schools advocate a tactically offensive posture. Conversely, evidence of a tactically defensive posture would negate the influence of all of these schools.

	Strategic Military Posture
People's War	Globally Defensive
Local War	Defensive vis-à-vis United States; Offensive vis-à-vis Regional Neighbors
RMA	Globally Offensive

Table 2: Criterion 1 - Strategic Military Postures of the Different Schools of Thought

The second criterion is the "societal dimension." This criterion examines the extent to which domestic concerns is an impetus for military actions. A central focus of a space program

[76] Michael Pillsbury, "PLA Capabilities in the 21st Century," 112.

[77] "The Fourth Modernisation," 102.

[78] Michael Pillsbury, "PLA Capabilities in the 21st Century," 125.

may be fanning the resurgent nationalism that is accompanying China's rise.[79] A program's goal may simply be to instill pride in the Chinese people, and hence strengthen the legitimacy of the Communist government. If influencing and mobilizing the populace seems to be a major goal of the program, then the societal dimension is assessed as high. Here the influence of the People's War school, or to a lesser extent the Local War school, may be most dominant. If the program focus is missing this goal, then the societal dimension is assessed as indifferent. Here the influence of the Revolution of Military Affairs school may be more dominant.

This criterion is a weaker discriminator for a variety of reasons. First, objectively measuring this criterion is difficult. Second, the presence of a high societal dimension does not necessary negate the influence of the Revolution of Military Affairs schools of thought. The resulting impact on the Chinese population, even if the societal dimension is high, may simply be a unintended byproduct of the military action. Conversely, however, the lack of societal dimension would clearly negate the influence of the People's War and to a lesser extent the influence of the Local War. In sum, this criterion is most useful for possibly distinguishing the influence of the Revolution of Military Affairs school versus the other two (see table 3).

	Societal Dimension
People's War	High
Local War	Modest/High
RMA	Indifferent

Table 3: Criterion 2 - Societal Dimensions related to the different Schools of Thought

[79] See Suisheng Zhao, *Chinese Nationalism and Approaches toward East Asian Regional Cooperation*, 1.

This monograph examines how influential the schools of thoughts are in the Chinese military space policy using these two criteria. The chart below depicts the strategic posture and societal dimension related to a particular school (see table 4). A strategically defensive posture and a high societal dimension, for example, would indicate the dominant influence of the People's War school of thought. The primary criterion for analysis will be the strategic military posture because it is more measurable and a hence better discriminator. The social dimension will be used as a supporting criterion to confirm the conclusions made using the first criterion. The analysis of the Chinese Anti-Satellite Program and the Manned Spaced Program using these criteria follows.

	Strategic Military Posture	Societal Dimension
People's War	Globally Defensive	High
Local War	Defensive vis-à-vis United States, Offensive vis-à-vis Regional Neighbors	Modest/High
RMA	Globally Offensive	Indifferent

Table 4: Schools of Thought and related posture and societal dimension

Case Study 1: Anti-Satellite Program

On January 11, 2007, the People's Liberation Army destroyed a Chinese weather satellite with a direct ascent Anti-Satellite (ASAT) missile. [80] The missile was a two stage, solid fuel SC-19 *Fengyun-1C* fired from a mobile transporter-erector-launcher.[81] The missile destroyed the satellite using the sheer force of the impact instead of the explosion of the warhead.[82] Impressively, the missile intercepted the satellite during the ascent trajectory instead of on its

[80] Office of the Secretary of Defense, *Military Power of the People's Republic of China 2009*, 27.

[81] Ashley Tellis, "China's Military Space Strategy," 41.

[82] Ibid., 42.

descent, revealing the increased sophistication of the overall guidance and control systems. With this test, China became the only other country besides the United States and Russia with tested Anti-Satellite capabilities.[83] For many American observers, this action was the smoking gun that proved China's hidden hostile intentions for space.

The success of the test sent shockwaves through the American defense establishment, as well as China's regional neighbors. The Chinese satellite was orbiting at 500 miles altitude, the same altitude of many U.S. spy satellites.[84] This was also the same height at which the satellites for the American missile defense network were being assembled.[85] American defense analysts were concerned about the extent that the United States was reliant on space capabilities, especially when compared to China. [86] China's regional neighbors, notably India, also took notice. The Indian Army Chief of Staff General Deepak Kapoor concluded that his country must also "optimize space applications for military purposes."[87] As impressive as this event was, analyzing the test within the context of the overall Chinese Anti-Satellite effort provides a better picture of what Chinese intentions for space may be.

Though research on such weapons started earlier, Chinese interest in Anti-Satellite capabilities gained momentum in the 1990s with the increased influence of the Revolution of Military Affairs school of thought.[88] It seemed a perfect Assassin's Mace weapon, a relatively

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[83] See David Isenberg, "The Newest Anti-Satellite Contender: China's ASAT Test" (occasional paper, British American Security Information Council, 16 March 2007).

[84] Ian Easton, *The Great Game in Space* (Project 2049 Institute, 2009), 3. http://www.project2049 net (accessed November 1, 2010). China now had the capability to threaten American Electric-Optical (EO), Synthetic Apertures Radar (SAR), and Electronic Intelligence (ELINT) satellites in Low Earth Orbit (LEO).

[85] David Isenberg, "The Newest Anti-Satellite Contender: China's ASAT Test," 2.

[86] William J. Broad, "Look Up! It's No Meteor, It's an Arms Race," *New York Times*, 21 January 2007, 4.3. In 2007, the United States owned or operated 443 out of 845 active satellites, or 53 %. China owned just 4%.

[87] David R. Sands, "China, India hasten arms race in space; U.S. dominance challenged," *Washington Times*, June 25, 2008, A1.

[88] Michael Pillsbury, "PLA Capabilities in the 21st Century," 113.

cheap capability within the reach of Chinese technological development that could strike at a vital support mechanism used by superior military forces. There were various options for Anti-Satellite weapons. Chinese experts undoubtedly looked to previous tests by the United States and the Soviet Union for ideas. An extreme option was the use of nuclear weapons. An Inter-continental Ballistic Missile (ICBM) with a nuclear warhead when detonated in space would kill a satellite through radiation and electric-magnetic pulse (EMP). On a lesser scale, non-nuclear options also were aplenty.

Technology-wise, non-nuclear Kinetic-Energy Weapons are cheap and easy to employ, especially when viewed in relation to weapons used for Ballistic Missile Defense. China could use a small, ground-launched kinetic kill vehicle that could reach satellites in Low Earth Orbit. Any country that could launch a satellite or build a sounding rocket could develop these types of Anti-Satellite weapons.[89] China has also researched options for High-Energy Laser weapons (HEL). High-Energy Laser weapons include Free Electron Laser (FEL) and Chemical Oxygen–Iodine Laser (COIL). China began investigations into Free Electron Laser in 1985, funded under the *863 project*.[90] In May 1993, China activated its first Free Electron Laser, the *Shuguang-1 ("Dawn Light").* The size of the weapon, however, limited its deployment. Research for a Chemical Oxygen-Iodine Laser weapon began in early 1980s and was incorporated under the *863 project* in April 1991. One of the first Chemical Oxygen-iodine Laser tests took place in May 1995. The efficacy of these weapons is still suspect; experts are unsure whether the Chinese can actually attack satellites using these methods. Other ideas investigated included High Powered Microwave (HPM) weapons, microsatellites that attack other satellites, and use of a spacecraft.[91]

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[89] Hui Zhang, *China's ASAT capabilities* (Submitted to FAS Report, Draft 1 July 2003), 119.

[90] In 1986, China started the *863 project*, a national high-tech R&D program to accelerate China's technological development. See the Science and Technology of the People's Republic of China website at http://www.most.gov/cn/eng/programmes1/200610/t20061009_36225 htm.

[91] Hui Zhang, *China's ASAT capabilities*, 120.

The Pentagon first started publicly disclosing Chinese Anti-Satellite capabilities in its annual report to Congress on the Military Power of China in 2003.[92] There was growing concern about China's intentions for using such weapons. On July 2005 and February 2006, China tried to destroy satellites using Kinetic Energy Weapons without success.[93] In August and September of 2006, China also reportedly used a high-powered, ground based laser to blind American reconnaissance satellites when they passed over China.[94] However, doubts linger about whether this truly was a weapon or part of a ground based missile guidance system.

Many analysts have pointed out that the decisions to execute these actions were not made in a vacuum. These activities coincided with a more aggressive American stance on the use of space and the failure of Chinese diplomats to make any headway on ensuring the non-militarization of space.[95] From the Chinese perspective, the American intentions to dominate this domain had been clear. The Bush administration supported a robust military program and conducted several space war games to ensure American preeminence in space. The inclusion of space as a domain for the U.S. Air Force also makes this evident.[96]

Concurrently, the China and the Russia have sought a comprehensive arms control approach to space security for a number of years. They have made proposals to prevent the deployment of weapons in space, the threat or use of force against objects in outer space, and ultimately an arms race.[97] China has urged the United Nations Conference on Disarmament to

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[92] See Office of the Secretary of Defense, *Military Power of the People's Republic of China 2003.*

[93] Richard Fisher, *China's Military Modernization*, 2.

[94] Ajev Lele, "Trends in Space Weaponisation," *Indian Defence Review* 25:3 (1 July 10 – 30 September 2010): 25-31.

[95] Bruce W. MacDonald, *China, Space Weapons, and U.S. Security* (Council of Foreign Relations, September 2008), 27.

[96] See website at http://www.airforce.com.

[97] Ibid.

pass the Prevention of an Arms Race in Outer Space, or PAROS, treaty.[98] The Americans have refused to consider any treaty that constrains their military dominance or contains weak verification measures. Some analysts have concluded that the 2007 launch was diplomatic in nature, intended to put pressure on the United States to negotiate a treaty.[99] Facing the inevitability of space weaponization and American plans to dominate space, China voiced its opposition by demonstrating its deterrent capability.

If such was the intent, the Chinese ultimately failed. The Americans responded in February 2008 with an Anti-Satellite test of their own. A SM-3 interceptor missile from an American submarine hit an American satellite loaded with 1000 pounds of toxic fuel as it entered the earth's atmosphere. The Americans explained the intercept as necessary for destroying a failing satellite which was nearing the end of its service. The Chinese undoubtedly saw it as a test of anti-satellite capabilities of the Navy's Aegis missile defense system.[100] Sometime later, the Chinese would respond again but with noticeable differences.

On January 11, 2010, the Chinese news agency *Xinhua* announced a successful test of a land based missile defense system. This time, a HQ-19 surface to air missile equipped with a new exo-atmospheric kinetic kill vehicle (KKV) destroyed another missile in outer space. The public announcement of this test was carefully choreographed, unlike the bumbling response in 2007. This test was also careful to not produce space debris like the 2007 test.[101] The Chinese seemed to be sending a nuanced message. On one hand, the test coincided with the American

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[98] Bates Gill and Martin Kleiber, "China's Space Odyssey," *Foreign Affairs*, 86:3 (May/June 2007): 2.

[99] Joseph Kahn, "China Confirms Space Test; Denies Intent to Intimidate," *New York Times*, January 24, 2007, A8.

[100] Bruce W. MacDonald and Charles D. Ferguson, "New Heights for Friendly Fire," *Virginian – Pilot*, Feb 23, 2008, B9.

[101] John Johnson, "Scientists cite growing peril of space junk," A10.

arms sales to Taiwan[102] and the three year anniversary of the 2007 Anti-Satellite test. The technology used for this procedure surpasses that needed to attack a satellite and could easily be applied for that purpose. On the other hand, the test was not officially and technically an Anti-Satellite test and did not directly provoke the Americans or the international community. The Chinese stopped short of sending a direct confrontational message by destroying another satellite.

Technology, Doctrine, Organization

As impressive as the Anti-Satellite tests have been, the technology that the Chinese employed was hardly state of the art. The improvements in Chinese Anti-Satellite capabilities have shown gradual but steady progress since the 1980s. The Chinese have improved their ability to track and identify satellites,[103] and the 2010 tests also revealed great leaps in sensing, cueing, and guidance technology.[104] But the overall technology that the Chinese have used for disrupting space systems from the ground is both easily acquirable and relatively inexpensive.[105] Any nation with missile technology could theoretically develop such capabilities. Satellites are relatively fragile, predictable, and not very maneuverable. The technology used in 2007 only marginally surpassed that of the American Air Launched Miniature Vehicle (ALMV) system test in 1985 and the Soviet Co-orbital System tests from 1963 to 1980s.[106] In sum, the Anti-Satellite program provided a relatively easy way to threaten an adversary's critical vulnerability using decades old technology.

The advances in technology have also not noticeably changed doctrine and organization. There is increasing interest in space within the People's Liberation Army, but the doctrine

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[102] "Anything you can do; Chinese missile defense," *The Economist*, Jan 16, 2010, 42.

[103] Office of the Secretary of Defense, *Military Power of the People's Republic of China 2009,* 27.

[104] Wendall Minnick, "China Missile Test Has Ominous Implications," *Defense News*, 19 Jan 2010.

[105] Bruce W. MacDonald, *China, Space Weapons, and U.S. Security*, 13.

[106] Eric Hagt, "China's ASAT Test: Strategic Response," *China Security* (Winter 2007): 39.

governing military space operations remains unclear and unset.[107] Much has been written about the use of asymmetric capabilities in space, but these writings have remained outside of the mainstream doctrine. There has also been no corresponding buildup of Anti-Satellite weapons in People's Liberation Army organizations. If China chooses to do so, it could build a substantial number of Anti-Satellite weapons.[108] Some analysts have been concerned about such a possibility where China deploys an extensive Anti-Satellite arsenal, consisting of missiles like those used in the 2007 tests, small satellites (space mines), or more advanced Anti-Satellite capability.[109] But no large manufacturing of Anti-Satellite missiles has been observed.

Similarly, China has yet to establish a space force to oversee such a development and deployment. China has not followed the Soviet model of building organizations with the arsenal to challenge American dominance. It seems to want to avoid the Soviet mistake of engaging in an arms race only to bankrupt itself.[110] The analysis of these actions leads to some surprising conclusions.

Criteria Applied

Though the Anti-Satellite problem is a cause for concern, the capabilities that the Chinese are seeking in their technological, doctrinal, and organizational developments lag behind that of the United States. The type of technology employed may be associated with those advanced by the Revolution of Military Affairs school, but the organizational and doctrinal developments necessary to challenge American hegemony has not followed. Though the success of the 2007 test may have signaled the rise of the Revolution of Military Affairs school, in reality China has

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[107] Deng Cheng, "Prospects for China' Military Space Effort," 214.

[108] Bruce W. MacDonald, *China, Space Weapons, and U.S. Security*, 3.

[109] Ibid., 5.

[110] James A. Lewis, *China as a Military Space Competitor* (Center for Strategic and International Studies, August 2004), 12.

been content with simply demonstrating its capabilities. Even in the 2010 Anti-Ballistic Missile test, the Chinese were careful not to send an overly hostile signal by targeting another satellite.

To its neighbors, however, China demonstrated capabilities that match or exceed that of every country in the region except Russia. The technology demonstrated, even if not accompanied by doctrinal and organizational developments, was enough to rival the space capabilities of the surrounding nations. The message of these demonstrations may have been for the region. The capabilities developed by the Chinese is not enough to signal a globally offensive posture vis-à-vis the United States but is more than enough to signal a locally offensive posture vis-à-vis its regional neighbors. This is a clear indicator of the influence of the Local War school.

Applying the societal dimension criteria, there are indications that the Chinese actions targeted the domestic audience. The missile test in January 2010 was timed during the three year anniversary of the 2007 Anti-Satellite test and as a response to the sale of American arms to Taiwan. This test seemed to have little impact on American policymakers as they viewed Chinese objections as an expected ritual following the announcement of American aid.[111] Rather, this military action may have been more for the domestic audience with the message that China is prepared to stand up to the United States. As Zhu Feng stated, China's missile defense is experimental and "not really meaningful." The real purpose was an opportunity for the People's Liberation Army to strut in front of their country. [112] The societal dimension is assessed as modest. The presence of a societal dimension does not negate the influence of any school of thought, though the influence of the People's War or Local War school is more likely.

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[111] Andrew Jacobs, "Chinese Missile Test was a Notice to Washington," *International Herald Tribune*, January 14, 2010.

[112] Ibid. Zhu Feng is the deputy director of the Center for Strategic and International Studies at Peking University.

Case Study 2: Manned Space Program

September 27, 2008 was a historic day in China as Zhai Zhigang performed his country's first spacewalk. The People's Liberation Army taikonaut used hand holds to maneuver along the exterior of the *Shenzhou VII* spacecraft during China's first extravehicular activity (EVA). [113] Having joined the exclusive club of nations that have sent men to outer space, this spacewalk was another crucial step in China's manned space program designed to spearhead the country's effort to reach great power status. Many in the United States have framed these efforts as a Trojan Horse to instill military capabilities behind the façade of civilian technological endeavors.[114] China, however, have defended its program by likening it to the American *Apollo* program of the 1960s. It has framed these efforts as a route to gain national prestige as well as to signal wealth, commitment, and technological prowess.[115]

Chinese efforts to send their taikonauts to outer space began in 1992. Then-President Jiang Zemin initiated and championed this program labeled *Project 921*.[116] *Project 921* was in part an effort to counter the negative images of the Chinese party resulting from the Tiananmen Square incident. But Chinese leaders also recognized that a manned space program could greatly benefit a nation.[117] Ziang wanted to link space and development and use *Project 921* to revitalize the country using science and education.[118] China had studied the benefits of the American *Apollo* program which included the rise of domestic pride, international prestige, development of

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[113] "Chinese EVA Keyed to Future Development," *Aviation Week and Space Technology* 169:13 (October 4, 2008): 27.

[114] Joan Johnson-Freese, *Space as a Strategic Asset*, 214.

[115] See James A. Lewis, "China as a Military Space Competitor."

[116] China's program to launch humans into space is designated as *Project 921*. Jeffrey Logan, *CRS Report to Congress: China's Space Program: Options for U.S.-China Cooperation* (Congressional Research Service, 2008), 3.

[117] Joan Johnson-Freese, *Space as a Strategic Asset*, 204.

[118] Ibid, 208.

technology for both civilian and military use, expansion of science and engineering programs in universities, and ultimately industrial and economic development. [119]

Officially, the Chinese have divided their manned space program into three phases.[120] The first phase, which the Chinese have completed, was the launching of taikonauts into space. The Chinese began experimenting with unmanned *Shenzhou* flights in 1999. They launched *Shenzhou II* in 2001 and *Shenzhou II* and *IV* in 2002. On October 14, 2003, the Chinese launched *Shenzhou V,* carrying China's first spaceman. Lieutenant Colonel Yang Liwei lifted off from the Jiquan launch site and returned 21 hours later as a great Chinese hero. The Chinese accomplished a task that only the United States and Soviet Union had achieved. The launch of *Shenzhou VI* followed on October 12, 2005, carrying Fei JunLong and Nie Naisheng.[121]

Phase Two and Three are still unfinished. Phase Two consists of establishing a space laboratory. The challenges associated with this phase include mastering of new skills such as extra-vehicular activities (EVA) as well as rendezvous and docking procedures between space lab and spacecraft.[122] As mentioned previously, the Chinese took a great leap with the completion of the space walk on *Shenzhou VII*.[123] This spacewalk paved the way for assembling a space laboratory from two *Shenzhou* modules.[124] *Shenzhou's* design allows for a forward module to be left in space for use as a laboratory. Next, the Chinese plan to launch the *Tiangong 1* and *Shenhou VIII*, which will give the taikonauts a chance to practice docking in space.[125] Finally,

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[119] Ibid., 204.

[120] Jeffrey Logan, *China's Space Program,* 3.

[121] Xin Xin, "China's Space Exploration, *China Today* (August 2007): 25.

[122] Sun Dangen, "Shenzhou and Dreams of Space," 59

[123] Yuan Yuan, "Walking the Walk: China's first space walk a leap for a newcomer," *Beijing Review* (October 9, 2008): 16.

[124] "Jubilant Chinese astronauts return to earth," *Irish Examiner,* Sep 29, 2008.

[125] Frank Morring, "Playing catch-up," *Aviation Week and Space Technology* 171:14 (12 October 2009): 45-47.

Phase Three will consist of constructing a permanent twenty metric ton space station orbiting earth by 2020. This stage is contingent on the development of a new heavy-lift launch vehicle, *Long March V*, which is still in development.[126]

One cause for America's concern with the Chinese manned space program is the heavy involvement of the People's Liberation Army. Initially, China did not separate the military and civilian aspects of the space programs thinking that a single program would be more efficient. China has separated the two in recent years, but the extent of the People's Liberation Army's control over the civilian aspects of the program is unknown. A civilian body called the State Council is the ultimate authority guiding space policy. Under it, the China Aerospace Science and Technology Corporation (CASC) has authority for spaceflight and the *Long March* (*Chang Zheng*) rocket program. The 2nd Artillery is responsible for functions like security, logistics, and facilities, and the taikonauts come from the rank of the People's Liberation Army Air Force.[127] Military commanders have overseen the manned space program and also have gone on to sit on the Chinese Military Commission, which oversees the State Council.[128]

Because of the heavy involvement by the People's Liberation Army and China's relative opacity, the United States has been concerned about the application of the technological developments for military use. The first big area of concern is the development of rocket technology. The *Long March* rocket history is similar to that of the *Delta*, *Atlas*, and *Titan* commercial launchers; they were originally intended for use as Intercontinental Ballistic Missiles.[129] Advances in navigation and tracking, in-orbit maneuvering, and computational

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[126] Anatoly Zak, "China considers big rocket power."

[127] Joan Johnson-Freese, *Space as a Strategic Asset*, 211.

[128] Ibid. General Cao Gangchun, for example, was the military commander for the manned space program from 1998 to 2003. He was then named as one of the three vice chairs of the Chinese Military Council.

[129] Ibid.

analysis resulting from the manned space program can all be used to increase offensive capabilities, to include evading Anti-Ballistic Defenses.

The second big area is the use of spacecrafts to increase surveillance and reconnaissance capabilities. *Shenzhou V* reportedly carried military equipment on board. Richard D. Fisher, vice-President of the International Assessment and Strategy center, testified before Congress that *Shenzhou V* was primarily used for military surveillance.[130] *Shenzhou VII*, according to the annual Pentagon report to Congress, deployed *Banxing-1*, a small imaging satellite with application for counter-space.[131] Some analysts emphasize this potential for the manned space flights and the future manned space station to be used for both defensive and offensive military space missions.

Some Chinese analysts do not understand the American reaction to their comparatively smaller manned space program. They point out that like China, the United States and the Soviet Union both used military launch pads and servicemen for their manned programs.[132] The worry about the advances in ballistic missile capabilities also seems misplaced. The *Shenzhou* launch vehicle is the liquid fueled *Long March 2F* carrier rocket. Unlike the American and Russian mobile, solid fuel strategic missiles, the *Long March 2F* require twenty hours to fuel. Hence they provide neither the flexibility nor the mobility of American missiles. In regard to the orbital maneuvering technology that could increase the ability to change the trajectory of Intercontinental Ballistic Missiles, the Chinese argue that this capability was developed in the 1970s.[133] The *Shenzhou* program does not demonstrate any capabilities that China does not already have.[134]

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[130] Ibid., 214

[131] Office of the Secretary of Defense, *Military Power of the People's Republic of China 2008,* 26.

[132] Sun Dangen, "Shenzhou and Dreams of Space," 61-62.

[133] The *Shenzhou* capsules can be rotated as it reenters this atmosphere, even with a low-rate propulsion system.

[134] Wu Chunsi, "Development Goals of China's Space Program," *China Security* 2 (2006): 112.

The concern about surveillance, reconnaissance, and navigation capabilities also seem misplaced. American observers have pointed out that the instruments in orbital modules of the *Shenzhou* spacecraft could be converted for use in military reconnaissance. The Chinese argue that it is illogical to assume that China would spend its limited resources on military functions that can be achieved through unmanned satellites.[135] China has been expanding its satellite capabilities to provide the country with increasingly better communications capability, weather data, and geo-positioning capability. If the Chinese are using the manned space program to advance reconnaissance capabilities, they are on the least cost-effective route.

Technology, Doctrine, Organization

As impressive as the Chinese accomplishments have been, the technology used for China's manned flights remains decades behind that of other modern nations. The Chinese are simply using a modified version of the 1960s Russian *Soyuz* technology for their manned missions.[136] To put their accomplishments in perspective, the United States and the Soviet Union conducted their spacewalks in 1965. The Americans put a man on the moon in 1969.[137] Granted, the Chinese are making headway. Zhang Qingwie, Deputy Director of *Project 921* and president of China Aerospace Corporation (CASC), stated that China achieved thirteen key technological breakthroughs in conjunction with their first manned spaceflight including reentry lift control of the manned spacecraft, emergency rescue, soft landing, malfunction diagnosis, module separation

[135] Ibid., 111.

[136] James Clay Moltz, *The Politics of Space Security* (Stanford, California: Stanford University Press, 2008), 276.

[137] David Barboza, "China Sends Three Into Space in the Nation's Third Manned Mission in Five Years," *New York Times*, Sep 26, 2009, A16.

and heat prevention.[138] The development of space hardware and software will increase Chinese know-how in everything from materials to computing powers to systems engineering, as the *Apollo* program did for the United States.[139] Much of the technology will have dual use applications in areas such as surveillance, navigation, and positioning, increasing the efficiency and effectiveness of China's weapon systems. [140] But these advances do not constitute scientific breakthroughs.

Like the Anti-Satellite program, there is little observable change in doctrine or organization resulting from the manned space program. The official Chinese plans for their manned space program are phased, incremental, cautious, and ambitious.[141] But these plans have not been translated into warfighting doctrine. Instead, discussion and writings about the manned space program remains in the realm of Chinese grand strategy. Chinese leaders view the space program as a tool for technological modernization.[142] This would firstly lead to international prestige as a great power. Second, this would help modernize the economy to sustain long term development. Military authors support this line of reasoning. People's Liberation Army Major General Chang Xianqi and Sui Junqin explain that the manned space project plays a "vital and highly unique role" which will yield "enormous scientific and economic value."[143] Third, the space program would help ignite and sustain nationalism for a government continually concerned

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[138] "Advantages of 'Shenzhou' spacecraft, 'Long March' Carrier Rocket," *People's Daily*, October 21, 2003, quoted in Joan Johnson-Freese, *Space as a Strategic Asset*.

[139] Joan Johnson-Freese, "China's Manned Space Program: Sun Tzu or Apollo Redux," *Naval War College Review* 61:1 (Summer 2003): 56.

[140] Chang Xianqi and Sui Jungin, "Active Exploration and Peaceful use of Outer Space," *China Security* 2 (2006): 19.

[141] Joan Johnson-Freese, *Space as a Strategic Asset*, 219.

[142] See James A. Lewis, "China as a Military Space Competitor."

[143] Chang Xianqi and Sui Junqin, "Active Exploration and Peaceful Use of Other Space," 19.

with internal stability. As one author stated, "The successful manned space program is not merely a technological feat, but an embodiment of national spirit."[144]

Organizationally, the Chinese seem content with the increasing diversification of responsibility, not centralization. The China National Space Administration (CNSA), China's equivalent of NASA, was established in 1993 and is responsible directly to the Premier. In addition, multiple government-owned "corporations" have been set up to handle different aspects of the space program. Under the aforementioned China Aerospace Science and Technology Corporation (CASC), there are Chinese Academy of Launch Vehicle Technology (CALT), China Academy of Space Technology (CAST), Shanghai Academy of Space Flight Technology (SAST), and the China Great Wall Industry Corporation (CGWIC).[145] This structure seems to be aimed at reducing the corruption within the government and military as well as to increase linkages to private enterprises to benefit Chinese industry. The aim does not seem to be for increasing military effectiveness. The trend of diffusion of power away from the People's Liberation Army has not changed.

Criteria Applied

Much like the Anti-Satellite program, the capabilities that the Chinese are seeking in their technological, doctrinal, and organizational developments lag behind that of the United States. The technological advances that the Chinese have made are not noticeably reducing the gap, much less leapfrogging American capabilities. These technological developments have not been accompanied by any doctrinal or organizational changes that signal the intent to transform the manned space program into a military project to challenge American hegemony. There seems to

[144] Teng Jianqun, "Trends in China's Space Program and the Prevention of Outer Space Weaponization," *China Security* 2 (2006): 68.

[145] Stacey Solomone, "China's Space Program: the great leap upward," *Journal of Contemporary China* (May 2006): 314.

be no intention of matching or exceeding American capabilities, hence the incredulousness on China's part regarding American worries.

China's manned space program, however, has awed its regional neighbors. Save Russia, no regional country has been able to follow through on the development of a manned space program.[146] Other nations may possess greater technological capabilities, but only China has been able to apply their technology to plan and execute manned space flights.[147] This organizational development at a national policy level has allowed China to become the only Asian country that has been able to focus their resources to build this capability. Like the Anti-Satellite program, China's capabilities indicate a globally defensive posture vis-à-vis the United States, but possibly a locally offensive posture vis-à-vis its regional neighbors. This clearly indicates the influence of the Local War School.

The second criterion of "societal dimension" does much to help explain Chinese actions. With the manned space program, the Chinese are spending billions of dollars on outdated technology that provides limited military benefit. It does, however, provide great political benefits.[148] There is a leadership connotation associated with having a manned space program. The perception that China is Asia's space technology leader impacts the domestic populace. Chinese space flights have served as positive rallying events for the population that provide a sense of pride and achievement in the Army and in the country.[149] Chinese taikonauts have become national heroes as they waved the Chinese flag in outer space.[150] The societal dimension criterion is assessed as high which indicates the influence of the People's War school or possibly the Local War school. This does not, however, negate the influence of the other schools.

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[146] Joan Johnson-Freese, *Space as a Strategic Asset*, 211.

[147] Ibid.

[148] See James A. Lewis, "China as a Military Space Competitor."

[149] Joan Johnson-Freese, *China's Space Ambitions* (Security Studies Center, Summer 2007), 13.

[150] Yuan Yuan, "Walking the Walk," *Beijing Review*, October 9, 2008. 16.

Case Study Analysis

In both of these case studies, the school with the most dominant influence seems to be the Local War school of thought. The established criteria shows that this school has the best fit when considering the variables involved. The primary criterion of "strategic military posture" examines how the Chinese have arrayed against potential adversaries. The Chinese are pursuing developments in technology, doctrine, and organization that give them capabilities that lag behind that of the United States but match or exceed that of its regional neighbors. China's posture is globally defensive vis-à-vis the United States but locally offensive vis-à-vis its regional neighbors, indicating the dominance of the Local War School of Thought.

The secondary criterion of "societal dimension" examines the extent to which the domestic impact is a concern behind military actions. This criterion is a weaker discriminator and is used to support the conclusions made with the first criterion. For the Anti-Satellite program, the societal dimension is assessed as modest. Combined with a posture that is defensive vis-à-vis the United States and offensive vis-à-vis regional neighbors, the dominant influence of the Local War is confirmed. For the manned space program, the societal dimension is assessed as high. Normally, such an assessment means the dominant influence of the People's War school. But given a strategic military posture that is locally offensive vis-à-vis regional neighbors and given that a high assessment in the societal dimension can be attributed to the influence of the Local War school, the dominant influence of the Local War school of thought is again evident (see table 4).

	Strategic Military Posture	Societal Dimension	Dominant School
ASAT	Defensive vis-à-vis United States; Offensive vis-à-vis Regional neighbors	Modest	Local War
Manned Space	Defensive vis-à-vis United States; Offensive vis-à-vis Regional neighbors	High	Local War

Table 4: Evaluated Criteria for two case studies

This is not to say that the other schools have no influence. The continual research into the Anti-Satellite program is likely promoted by the Revolution of Military Affairs school. The fact that the manned space program contributes extensively to strengthening the relationship among the party, the military, and the people likely means that the People's War school is supporting this effort. But the general orientation of these programs puts the focus foremost on matching or exceeding the capabilities of its regional neighbors. The Local War school is likely spearheading these efforts to posture the military offensively in China's backyard.

The dominant influence of the Local War should not come as a surprise in light of Chinese grand strategy. Though China's power continues to increase, the consensus still seems to follow Deng Xiaoping's dictum: "Coolly observe, calmly deal with things, hold your position, hide your capabilities, bide your time, accomplish things where possible."[151] At China's present state, what is possible is achieving the status of a regional hegemon. China seems to be pursuing this status with the aid of its military space program. What is not possible yet is achieving the status of a global hegemon. China may well be biding their time and even hiding their capabilities for the future. It is important to coolly observe and calmly deal with the Chinese capabilities as they develop.

[151] "Less Biding and hiding," *The Economist*, December 4-10, 2010, 8.

Conclusion

This monograph has provided an alternate perspective on the reasons behind China's military actions in space. The intent was to provide a counterbalance to the prevailing view that China is a monolithic actor that has little constraint on its military spending and will use their new found wealth to challenge American hegemony in space. China's challenge to American hegemony may one day come, but is not the case yet. Under its opaque façade, China has many competing views that vie for influence in the pursuit of military space policy. The intent behind the policy is to pursue and strengthen its regional hegemony. Understanding this intent is of great benefit to the American military.

Firstly, understanding that the Local War School of Thought has the dominant influence provides clues to the purpose of the People's Liberation Army. In space, the purpose has not been to challenge American hegemony, but to reinforce its growing regional hegemony. In tracking Chinese space capabilities, American analysts should be cognizant of strengths and weaknesses not only compared to the United States, but to countries like Japan and India with whom China has had traditional disagreements.[152] As Chinese power grows, China may be inclined to act more aggressively in the region to pursue resources or to protect its territorial claims. It will likely use space to help it do so. The American military should expect and plan for conflict not only between it and the People Liberation's Army, but between China and a regional adversary. How this conflict affects regional stability as well as the use of space should be explored.

Secondly, the American military should recognize the opportunity to strengthen the military relationships with the other countries in the region. That China's regional neighbors have viewed China's rise with suspicion is no secret. Recently, Japan announced a new defense

[152] See "Brushwood and gall," *The Economist*, December 4-10, 2010, 3-5.

policy to counter rising Chinese military might, publishing new National Defense Program guidelines.[153] Such suspicion provides room for increased bilateral military cooperation with countries like Japan. Furthermore, the opportunity to strengthen the existing framework for multilateral military cooperation should also be explored. The absence of an effective collective security apparatus has contributed to Asia's remaining a region that can produce tinderboxes.[154] The growing apprehension toward China may be the catalyst needed to strengthen collective agreements in regards to use of space as well as in other domains.

Thirdly, the United States should be aware that its actions or strategic communications may increase or decrease the influence of a certain school of thought. The American military's propensity to view China as the "enemy" may lead to a self-fulfilling prophecy. Most Chinese officials do not seem to want to challenge American supremacy or repeat the Soviet error of bankrupting the country while pursuing an arms race.[155] However, American strategic communications that contain poorly veiled portraits of China as its enemy may empower those in China that see space conflict with the United States as inevitable. A time may come when the dominant school in China is one that sees no other choice but to militarize space. But thoughtful actions and words may delay this day and strengthen the hand of more moderate governmental and military elites. Doing this may involve taking risks, like inviting China into a multilateral framework to increase transparency and minimize misunderstandings.

Lastly, the Chinese have identified one of the American military's critical vulnerabilities. The overreliance on space systems and the relative ease that the Low Earth Orbit satellites can be attacked warrants study on how to mitigate these risks. With the proliferation of missile technology, other nations may learn from Chinese efforts to attack America's Achilles heel.

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[153] Martin Fackler, "Japan Announces Defense Policy to Counter China," *New York Times*, December 16, 2010.

[154] Strategic Reassurance," *The Economist*, December 4-10, 2010, 16.

[155] James A. Lewis, "China as a Military Space Competitor," 2.

Protecting the relatively vulnerable space platforms may be essential to future warfare. Similarly, the American military's ability to operate with degraded space support for a prolonged period of time may prove integral for victory in the future. Research should continue to minimize American vulnerabilities, as well as to increase its capacity to ensure American predominance in space. Having China continue to view challenging American space dominance as a fruitless effort is a good way to prevent conflict.

Assessing China's intentions for space will remain a difficult endeavor. The competition and tensions inside China's opaque policymaking apparatus will continue as different schools vie for influence. For the time being, the dominance of the Local War school of thought has meant that China's military use of space has been focused on reinforcing its regional hegemony. China has remained in a strategic defensive posture vis-à-vis the United States, but seems to be using space and other domains to switch to a strategically offensive posture vis-à-vis its regional neighbors. This school may advocate using space to support aggressive actions in the region to pursue China's national interest. A better understanding of China's inner working and prudent policy may serve to minimize the conflicts in the region as well as between the United States and China.

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